

**Instruction Manual  
800 Series  
VISUAL-PAGER**



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# SPECIFICATIONS

## **VISUAL-PAGER MODEL 804 Sending Unit**

Local Display .....	Built-in LED readout
Remote Display .....	Wall mount 5.5-Inch LED Display
Max Distance From Sending Unit .....	1000 feet using RG59/U Cable
to Remote LED Display	
Max Number of LED Displays .....	Up to three 2-digit Displays or two 3-digit Displays or two 4-digit Displays without an additional transformer or booster amps.
Max Number of Digits .....	4 Digits
Max Number of Numbers Stored .....	7 each 4-digit numbers will be stored and sequenced until deleted.
Max Numbers of Sending Units .....	Up to 8 Sending Units may be in series together to allow inputs from 8 different locations and a single combined output to one or more LED Displays.
that can be connected together as input units	
Power Input Requirements .....	24V AC 1.2A supplied by transformer which requires 115 Volts AC @.72 Amps
Fuse Requirements .....	1.5 Amp AGC normal blow fuse

## **LED MODEL 820, 830, 840**

Max Number of Digits .....	2, 3, or 4 digits
Character Height .....	5 and 1/2 inch
Character Viewing Distance .....	150 feet
Max Operating Distance .....	Max 1000 feet total cable length in entire system using RG59/U Cable with a solid copper center conductor (see Multiple Outputs, page 8).

# Warning

All power transformers, line cords, and electrical equipment should be kept out of the reach of children. Such equipment should be kept 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 with your system is rated CL2 and is approved for installation everywhere except plenum areas. Contact the factory for plenum cable.

## Important Pre-Installation Instructions:

Before permanent installation, we recommend that you test your system and all cables in one room on a table or floor. This will be of great benefit in trouble shooting if you should have any problem after installing the system.

**FIRST**, connect the power supply to the Model 804 Sending Unit. Turn power "ON" and enter a number. If the number is shown on the built-in display of the Sending Unit, the Unit works.

**NOTE:** Model 804 **Slave** Units have been modified to operate as part of a Multiple Sending Unit system and must be plugged into a Model 804 Master Unit that is turned ON to operate. See pages 5 and 8 for additional instructions.

**SECOND**, turn power "OFF" and select the cable to be used between the Sending Unit and the LED Display. Connect one end of this cable to the Sending Unit (see page 7) and type in a number. Press ENTER, if the number FLASHES the cable is shorted and needs to be repaired before proceeding, otherwise if the system appears to work correctly then continue.

**THIRD**, turn power "OFF." Connect the other end of the cable to the Display and verify that it works by turning on the power and typing in a number and pressing ENTER. If the number FLASHES there is a short in the cable or the Display. If the Display does not show the numbers once they are entered, then the signal cable is "open" or the Display has failed and must be serviced. An "open" cable does not make a connection or has a broken wire.

**FOURTH**, return the Warranty card immediately to register your purchase and begin your Warranty period. Registering will not affect your right to return the system during a 30-day trial period.

# INSTALLATION PROCEDURE

**When installing the Visual-Pager Paging System, the following procedure should be followed:**

## **FIRST: INSTALL 804 SENDING UNIT**

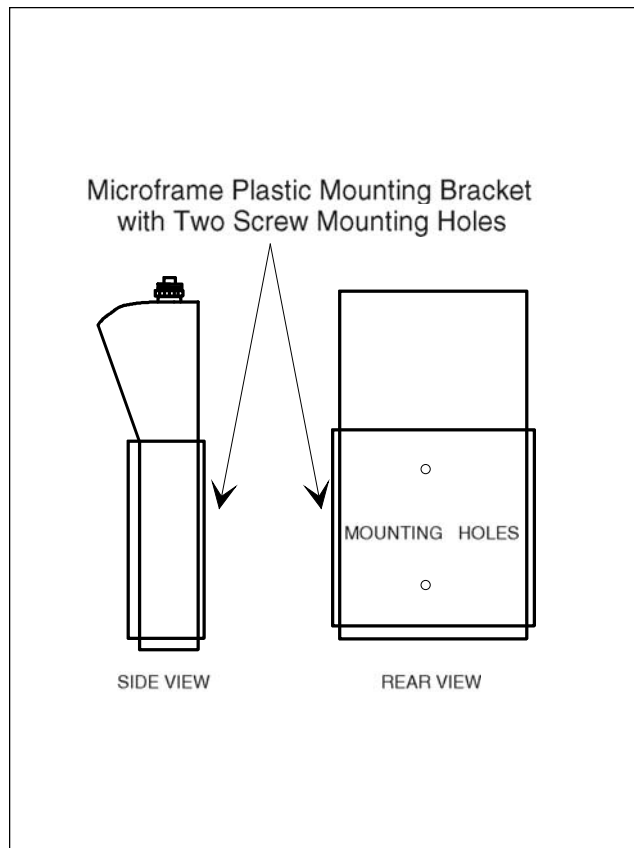
Select a location that is handy for workers but not in the way. The Model 804 Sending Unit may be mounted on a table top or on the wall. Locate the Sending Unit so that the cord from the wall-mount transformer will not be accessible to children or present a safety hazard. Also, do not cover bottom of the Sending Unit with soft material because doing so will block air flow to the back of the case and may cause excessive heat. The installation location must be within 5 feet of an AC power outlet so

that the cord may reach the Sending Unit.

You may use the enclosed plastic mounting bracket if needed. Place the mounting bracket on the Sending Unit at the desired mounting location on a table top or wall and mark the position. Then slide the Sending Unit up out of its mounting bracket and attach bracket using screws supplied. Once screws are screwed in flush with back of bracket then slide Sending Unit into bracket. The Sending Unit may be easily removed if necessary.

Install the Sending Unit and connect to AC power. Do not attach the cable that runs to the remote Displays yet. Test for operation by entering a number and observing this number in the built-in display of the Sending Unit. This verifies that the system is working. If it did not work, refer to the trouble-shooting section. Now turn power "OFF."

An AC outlet is only needed by the Sending Unit which will power both the Model 804 Visual-Pager Sending Unit and the remote LED Display.



Mounting for Model 804 Sending Unit

## **SECOND: INSTALL THE REMOTE DISPLAY**

In selecting a remote Display location, remember that the Display will be most visible when mounted within 3 or 4 feet of eye level. This will keep the Display in the proper field of view for the observer.

The Display may be hung on a screw anchored in the wall. You may then punch a hole for the cable using the paper template provided on page 11. Place this hole template on the wall and punch one hole for the input cable from the Sending Unit, and another hole for the cable to the next Display, if you have another Display. Do not connect the cable to either Display yet.

# INSTALLATION PROCEDURE

## (Continued)

### **THIRD: INSTALL SIGNAL CABLE**

A single signal cable must be installed between the Sending Unit and the remote Display. For proper cable selection please refer to the cable length chart on page 9. This will allow the longest distance and the most reliable operation.

The Visual-Pager System uses the common RCA phono connector. Cable supplied by Microframe has the RCA phono connector soldered on the end, ready to plug into the Sending Unit and Display.

Instructions for soldering RCA phono connectors on to your own cable are on page 10. Please read these before you install the RCA phono connectors. If you have soldered your own cable connectors, you should test the cable for shorts with a short tester or Ohm meter (after the cable is installed and before you connect the Display).

Next plug in the cable to the Sending Unit RCA phono jack marked "Signal Out To System." Turn "ON" the power switch. When the Sending Unit power LED (small red light inside the local display) turns on type in a number and press ENTER. If the number FLASHES, then your cable is shorted and needs to be repaired before proceeding.

Next turn power "OFF" and proceed to Fourth:

Display Connection.

If you turn "ON" your Sending Unit and you cannot see a power light, you may have blown a fuse. Turn "OFF" power and remove transformer from wall outlet. You may gain access to the fuse by removing the four corner screws on the rear cover of the Sending Unit. Replace only with fuse as stated in specifications on page 1 to prevent permanent damage to the Sending Unit (remember to remove transformer from wall outlet before replacing fuse).

### **FOURTH: DISPLAY CONNECTION**

After the cable is installed and connected to the Sending Unit and tested, turn the power "OFF," and connect cable to the remote Display. Turn power "ON" on the Sending Unit. Both the built-in display and the remote Display should be blank. Now type in a number and press "ENTER." The number you entered should appear on the built-in display and the remote Display. If nothing is shown on the remote Display, then the signal cable is "open" (does not make connection or has a broken wire). Check the connectors and replace if necessary.

## **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 the life support device or system, or to affect its safety or effectiveness.

# VISUAL-PAGER 804

## 804 FEATURE\*

### ☞ Multiple Paging

- Multiple Outputs
- Multiple Inputs
- Signal & Power on Same Cable

#### Use with :

- Model 820 2-digit wall Display
- Model 830 3-digit wall Display
- Model 840 4-digit wall Display

## OPERATION

### *Instructions for use*

The Model 804 Sending Unit has its own built-in, easy-to-read display so that you can see what numbers are being entered, as well as what numbers are being displayed on the remote Display.

#### **Normal Mode**

While in normal mode, the built-in display will show what is being displayed on the remote Display.

#### **Enter Mode**

When a number button is pressed, the sending unit will go into enter mode and the "ENTER" light will flash. While in enter mode, the paging number being entered will be shown only on the built-in display. Continue to press number buttons until the complete paging number is shown. Then press "ENTER" to display the paging number on the remote Model 820-, 830-, or 840-LED Display. When "ENTER" is pressed, the sending unit will go out of enter mode and the number just entered will disappear from the built-in display and be placed in sequence with any other numbers to be displayed on the remote Display. If you make an error while entering a paging number, press "DELETE."

#### **Delete Mode**

To delete a paging number, push "DELETE" when that number appears on the display (built-in or remote). The next available number will be displayed immediately.

### **Multiple Paging**

The Sending Unit will store up to 7 four-digit numbers and display them sequentially until the operator deletes them. These numbers may be entered one at a time using the instructions above.

### **Multiple Outputs**

The Sending Unit will drive the following: 2 each 4-digit Displays, or 2 each 3-digit Displays, or 3 each 2-digit Displays. The maximum total combined cable length of cable to all Displays, Slave Sending Units, and Master Sending Unit must not exceed 1000 feet. The cable length chart on page 9 must be observed. If you have any questions, call us for technical assistance.

### **Multiple Inputs Model 804**

You may cascade up to 7 Model 804 Slave Sending Units (plus the Master Sending Unit) on the same common low-cost coaxial cable to the Display(s). The "Signal Out To System" output from each Slave Sending Unit is connected to the same cable that connects the Master Sending Unit to the remote Display(s). The Master Sending Unit power must be turned "ON" for the system to work. Slave Sending Units do not need to be "ON" unless in use. Each Slave Sending Unit will send its numbers to the Master Sending Unit which will automatically store, combine, and display in sequence all the numbers entered from all Sending Units. Each Unit will display all numbers entered from itself, as well as all numbers entered from all other Units—at the same time they are being displayed on the remote Display(s). Any number may be deleted by pressing "DELETE" on any Slave or Master Sending Unit when that number appears in the display.

### **Power Connection**

Connect the power supply to an AC outlet and connect the power plug to the connector on the top side of the Sending Unit marked "18-24 VAC Power In." It is best to turn the power off using the "ON/OFF Switch" of the Sending Unit when not in use. Doing so will greatly prolong the life of the system.

### **Fuse**

The Model 804 Sending Unit contains a fuse inside the case on the bottom of the circuit board. When replacing the fuse, be sure to disconnect power from the AC wall outlet. Replace only with the size fuse stated in the specifications on page 1, otherwise permanent damage may occur.

# LED MODELS 820, 830, 840

## Display Features

- 5 1/2 Inch Numbers
- Two-, Three-, or Four-Digit Displays
- No AC power Required
- One-Cable Installation
- Simple Surface Mount

## POWER

The Model 820/30/40 LED Display is designed to operate with the Model 804 Sending Unit. When the Sending Unit is turned off, the Model 820/30/40 Display is also turned off automatically. An AC power outlet is not used at the Display.

## MAXIMUM NUMBER OF DISPLAYS

Each Model 804 Master Sending Unit can power up to two Model 840, two Model 830, or three Model 820 LED Displays. These limits still apply for systems which have multiple Sending Units.

However, if more Displays are needed for a system, a Model 860 Booster Amp may be added. Each Model

860 Booster Amp allows six (6) additional Displays to be added.

## USING TWO OR THREE DIGIT DISPLAYS

The Sending Unit will accept up to 4 digits; however, only the last two digits entered will be displayed on a two-digit Model 820 LED Display. Only the last 3 digits entered will be displayed on the three-digit Model 830 Display.

## SYSTEM SIGNAL CONNECTION

You may refer to the connection diagram on pages 7-8 for LED Display connection. Connect the Sending Unit end of the coaxial cable with an RCA phono connector (or RCA to type "F" adapter) to the RCA phono connector on the top side of the Sending Unit marked "Signal Out To System." Note: the "Auxiliary Connector" should not be used with 800 Series Displays.

Connect the remote Display end of the coaxial cable to either "SIGNAL" connector on the Model 820/30/40 Display. For a second Display, connect the signal cable to the other RCA phono connector on the first Display, and the other end to either connector on the next Display.

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# WARRANTY

## LIMITED WARRANTY AGREEMENT

Your VISUAL-PAGER Units are warranted against failure due to defects in workmanship or material for a period of one (1) Year from the purchase date. The Unit will be repaired or replaced by Microframe Corporation. Obvious abuse or mishandling of the unit is NOT covered by this Warranty.

**MICROFRAME CORPORATION**  
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## MERCHANDISE RETURN

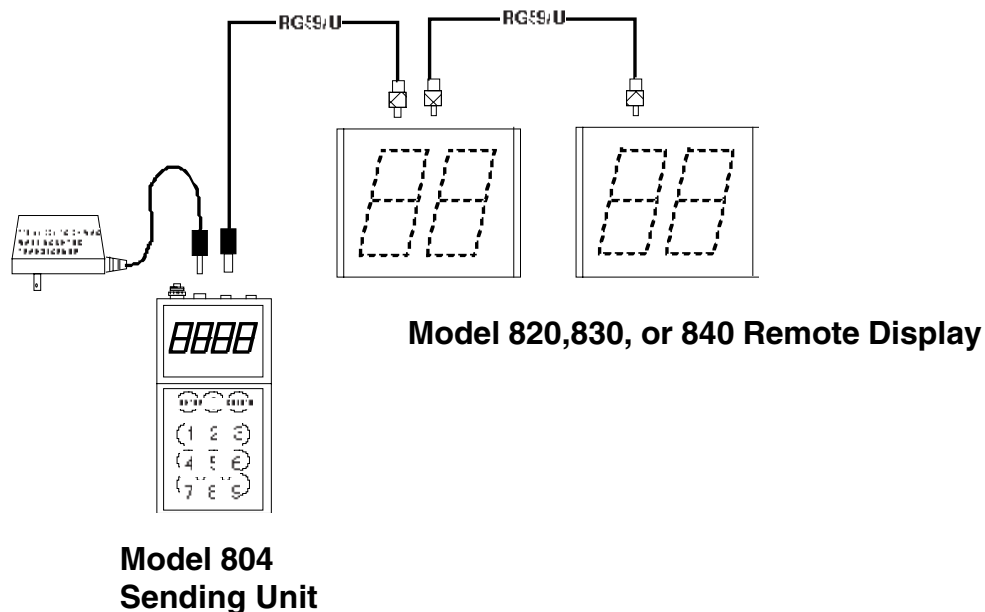
If your Unit does not work satisfactorily, please give us a call. We may be able to clear up the problem over the phone. If it becomes necessary to return your Unit to the factory, please do the following:

1. Pack Unit in packing material and a sturdy box.
2. Include the power supply. You need not return the cable and connectors unless they are the problem.
3. Return the system insured and prepaid since we are not responsible for shipping damages and losses on returned units.

We will repair or replace the Unit at our option and return it to you.

# VISUAL-PAGER Connection Diagram

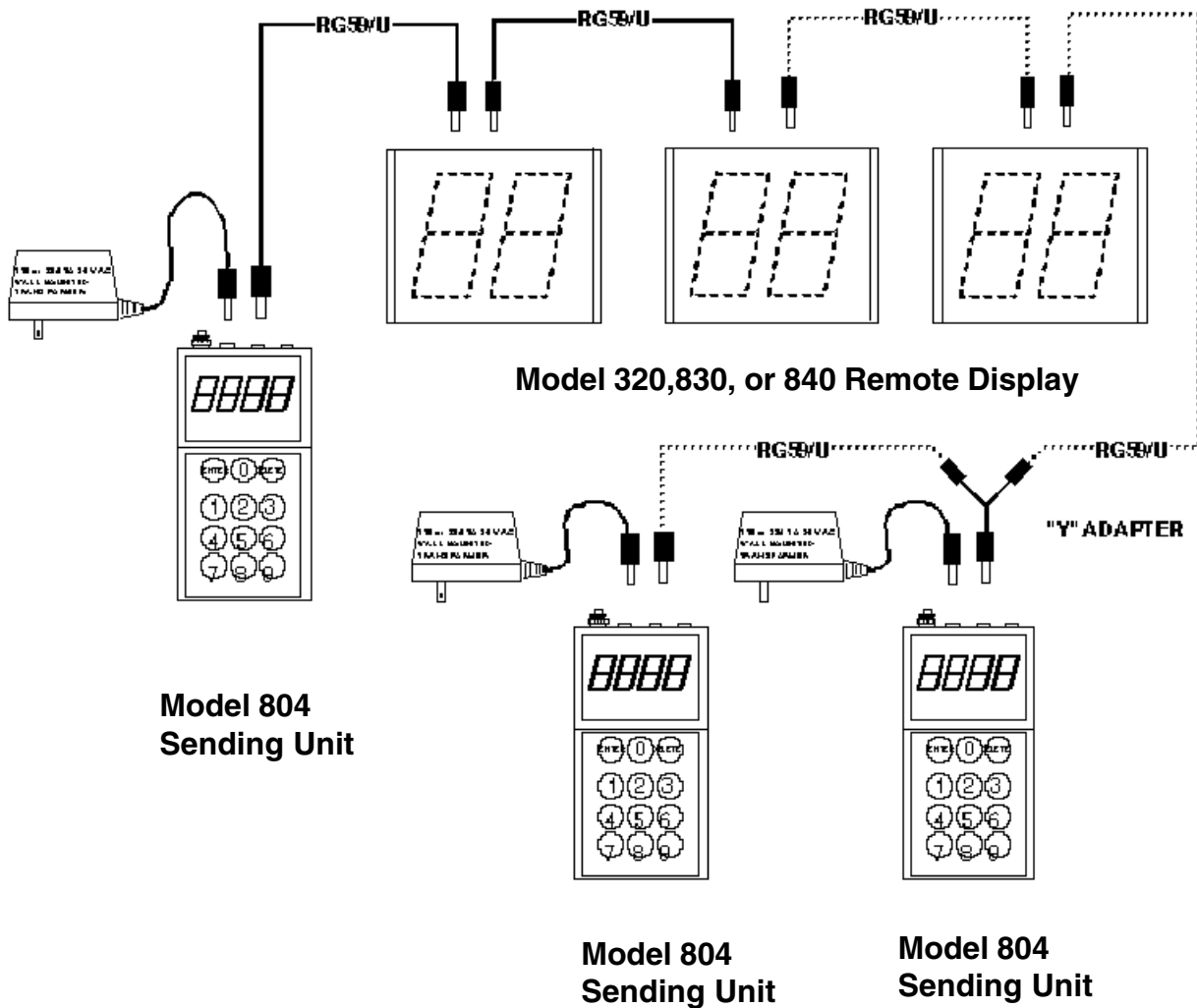
You may connect your system as shown in the examples below.



The VISUAL-PAGER System is very easy to install if connected as shown above. One power supply next to the Sending Unit powers the entire system. Because the system uses common RG59/U Coaxial Cable (similar to the kind of cable used in cable TV systems) and readily available RCA phono connectors, extensions and additions can easily be made by using locally purchased parts. For cable distances over 300 feet refer to the cable length chart on page 9. The system may be connected in other configurations, for example, the Sending Unit may be connected with a "Y" adaptor and two cables if the Displays are to be located on opposite sides of the Sending Unit.

# Multiple Input Connection Diagram

You may connect your second input station as shown in the examples below.



The Model 804 Sending Units may be connected at any point along the signal cable. The Master Sending Unit is placed in any one of the above positions; however, the Master Sending Unit must be "ON" for the system to work. Slave Sending Units do not need to be "ON" unless in use. Refer to the cable length chart on page 9 for proper cable selection. The system may be connected in many other configurations, for example, the Sending Unit on the right may be connected with a "Y" adaptor to the middle Sending Units instead of to the second Display.

# LED TROUBLE-SHOOTING CHART

SYMPTOM	POSSIBLE CAUSE	CURE
Built-in display and wall-mount Display not working.	Model 804 not connected to power or power supply is bad or fuse blown.	Check AC wall connection or change to another wall plug. Replace fuse.
Built-in display works but wall-mount Display does not light up or wall-mount Display has erratic display.	Poor signal connection to wall-mount Display or no signal connection.	Check signal cable connections or move wall-mount Display close to the Model 804 and try with short cable to prove whether the problem is in the Units or in the cable.
Model 804 works until cable plugged in, then display FLASHES.	Shorted cable.	Check connectors for shorts repair or replace cable.

## Maximum Cable Length Chart For Different Display Combinations

Number of Digits	Number of Displays	Maximum Cable Length	
2-Digit Display	1 ea.	600 ft.	1000 ft.
2-Digit Display	2 ea.	300 ft.	1000 ft.
2-Digit Display	3 ea.	200 ft.	1000 ft.
3-Digit Display	1 ea.	400 ft.	1000 ft.
3-Digit Display	2 ea.	200 ft.	1000 ft.
4-Digit Display	1 ea.	350 ft.	1000 ft.
4-Digit Display	2 ea.	175 ft.	1000 ft.

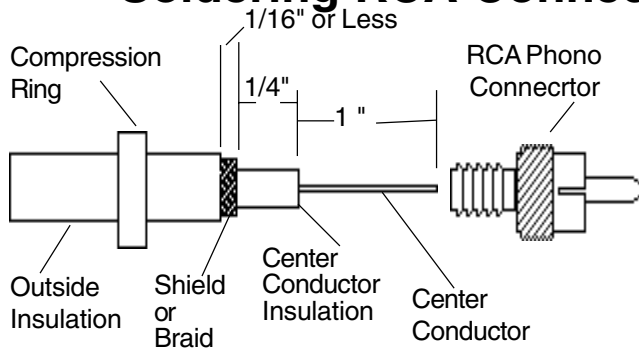
These are the recommended maximum distances using the following cables:

Type	Centerconductor	Impedance	DC Resistance Ohms/1000 ft.	Braid
RG58/U*	22 AWG copper plated steel	52 Ohms	40 Ohms	Bare Copper
RG59/U	22 AWG copper plated steel	75 Ohms	40 Ohms	Bare Copper

RG58/U*	20 AWG <b>solid copper</b>	52 Ohms	<b>10 Ohms</b>	Bare Copper
RG59/U	20 AWG <b>solid copper</b>	75 Ohms	<b>10 Ohms</b>	Bare Copper
16AWG	Paired Cable (Requires A0100 Adaptor)		<b>4 Ohms</b>	Bare Copper

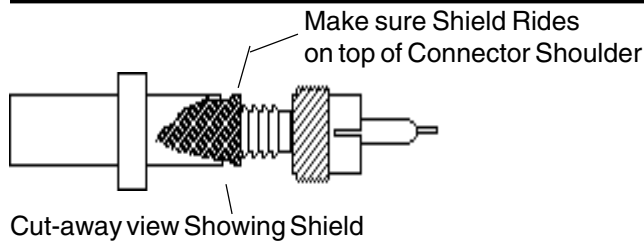
**\*USE OF RG-58/U CAN CAUSE ASSEMBLY PROBLEMS WITH RCA CONNECTORS**

# Soldering RCA Connectors Onto RG59/U Cable

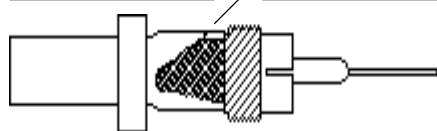


If you are soldering on your own RCA connectors, please read these instructions. They show how to make a clean, reliable non-shorting connection. If you don't have soldering experience, find someone who does. It will make the job much easier.

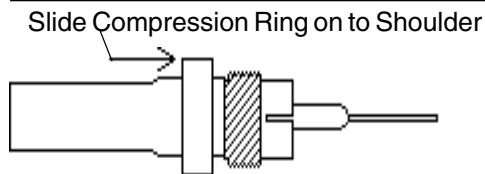
Slip compression ring over RG59/U cable and then trim cable to the dimensions shown.



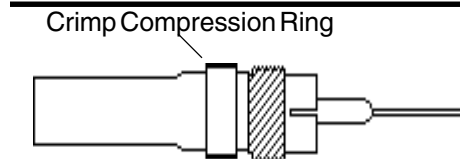
Slide the RCA phono connector down over the cable, making sure the braided shield slides on the outside of the connector flange.



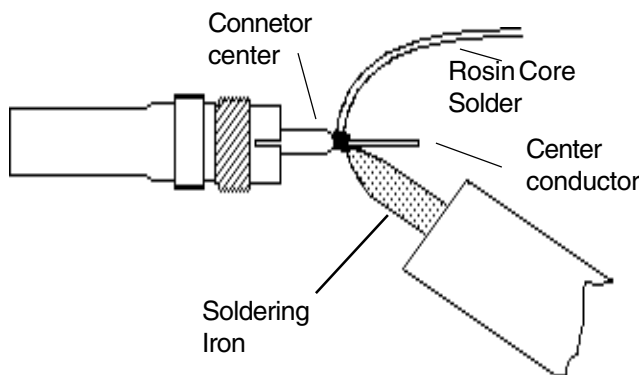
Slide RCA phono connector on cable until cable fits snugly against connector.



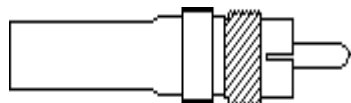
Slide crimp ring towards connector and place in the approximate center of the shoulder.



Crimp ring down on cable securely with crimp ring tool purchased from Radio Shack.

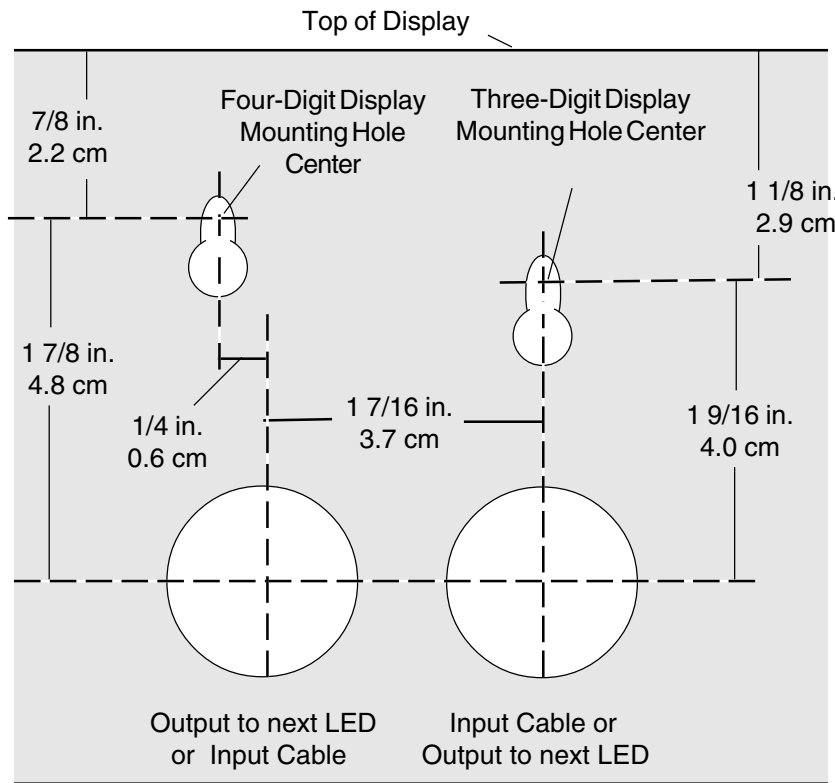


Now solder center conductor by carefully heating center conductor with soldering iron and applying solder as shown. Do not apply soldering iron to connector center because it will leave globs of solder. After heating for several seconds, the solder should draw up into the center of the connector. Use only enough solder to fill the center of the connector 1/8 inch back from the end you are soldering.



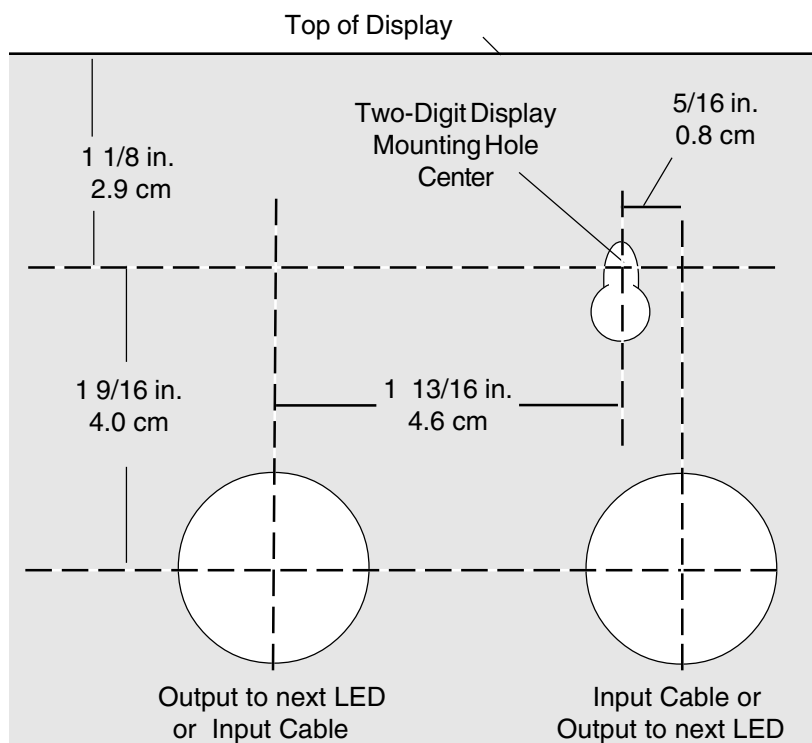
Allow 15 seconds of cooling without moving the cable. Then you may trim the excess center conductor with a pair of wire cutters.

# Display Mounting Templates



## Three Digit 830 and Four Digit 840 Template

First make a copy of this template. Then place template on wall with words facing toward you and start screw in the center of the screw hole. Leave screw head out 1/4 inch from wall surface. Locate cable hole by marking the wall through the template. Remove template and drill hole in wall for cable. For Displays where a second cable is connected, mark both holes while template is on the wall.



## Two-Digit 820 Template

First make a copy of this template. Then place template on the wall with words facing toward you and start the screw in the center of the screw hole. Leave screw head out 1/4 inch from the wall surface. Locate cable hole by marking the wall through the template. Remove template and drill hole in the wall for cable. For Displays where a second cable is connected, mark both holes while template is on the wall.



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