

# How to Make a Wiring Plan for Your ZON System

Describe your system clearly on paper, and you greatly simplify the wiring process. This is especially important with a new home. The process of building a new home requires so many decisions of you over many months that the details of your audio system are easily forgotten.

Although you may use floor plans, they are not a necessity. All you need are rough sketches for each room. Use the blank forms you'll find at the end of this article.

## How do you estimate wire length?

The key to estimating wire runs is to work your way from point to point carefully, without overlooking anything. If you are working from plans, use a scale ruler. Better yet, walk through the construction site or your existing house, pacing off each run and thinking through where the wire will have to turn a corner or go up or down a wall. Convert your paces to feet and write it down on your room plan. Here are five keys to estimating wire:

- Careful inspection:** Determine where structural obstacles might lie. Get into the crawl spaces to inspect. Use a stud finder on finished ceilings to determine which way the joists go.
- Pace off the entire route:** Don't guess, pace off everything. Double-check yourself for consistency.
- Measure the ceiling height:** Don't guess at the ceiling height, measure it. If you "eyeball" a vaulted ceiling, you're asking for trouble.
- Allow 2 to 4 feet for wire termination:** Allow plenty of extra wire, so you can set the device on a ladder or floor while you hook it up.
- Allow 10 to 15 percent extra for insurance:** In a new home, your planned wire route might be thrown off by something the plumber or electrician did. In an existing home, you won't know your exact routes until the holes are made. To be safe, buy 10 percent more wire than you think you need.

**Crutchfield Custom Installation Room Plan**

Room: Home office Room # 1 System: Johnson  
 Date: D Approved by: E

**Location Notes**

1. Controller/amp
2. Input module
3. Ceiling speaker
4. Ceiling speaker
- 5.
- 6.
- 7.
- 8.
- 9.
- 10.
- 11.
- 12.

#	Type of Device	Bracket or Box	Wire Type	Wire Destination	Wire Length	Time	Noted
1	Zen ZAC-60	RIK-60	CAT5	Router	48ft.		☐
2	Zen ZIM-4	J-box	CAT5	Router	84ft.		☐
3	Polk RC40	none	Spkr.	ZAC-60	28ft.		☐
4	Polk RC40	none	Spkr.	ZAC-60	37ft.		☐
5	<b>H</b>	<b>I</b>	<b>J</b>	<b>K</b>	<b>L</b>		☐
6							☐
7							☐
8							☐
9							☐
10							☐
11							☐
12							☐

- The room name:** In new construction, use the names given the rooms by the architect. It will ease confusion when you are talking to anyone at the site.
- The room number:** This is an optional feature that might help you fill out the Master Plan sheets later. You can use a room number instead of the room name to save space on crowded Master Plan sheets.
- System name:** Just in case you do send these sheets out to get a bid from your electrician or security installer.
- Date:** Write in the date when you feel the plan is finished.
- Approved by:** Sign it when you approve it, so you'll know it's the final draft.
- Sketch:** Draw a quick sketch of the room. Put in the doors and the major pieces of furniture. Draw circles wherever you're placing a speaker, a ZAC-60 controller/amplifier or a ZIM-4 input module. Anywhere you need a wire, you need to draw a circle. Now number them for reference to the lists.
- Location notes:** In the location notes, describe the device and its location.
- Type of device:** The bottom half of the Room Plan sheet is where you specify all of the parts for each room. In the first column, enter the model number of the device you're installing here. In our example, item 1 is a ZAC-60 controller/amplifier. Items 3 and 4 are ceiling speakers.
- Bracket or box:** If you need to buy a bracket or box for this device describe it in the second column. Item 1 is a RIK-60 rough-in bracket for the ZAC-60 amplifier/controller.
- Wire type:** In the third column, describe the type of wire you need for each device.
- Wire destination:** In the fourth column, write where the wire run goes. If it's going to somewhere else in the room, specify the location number. If the wire goes to your router, you can use the term "Home."
- Wire length:** In the next column, write your estimate of how much wire each run will use.

## ■ A room plan example

Imagine this installation is in new construction – a one-story home. We will estimate the wire needed to install a ZON controller, an input module and a pair of ceiling speakers in the home office. There are four wire runs:

### 1) ZON controller to ZR-98 router, CAT-5e cable

Inspection reveals that the easiest route between the ZON router in the utility room and the ZAC-60 controller/amp in the home office is a straight run of 40 feet in the attic.

Here's what we estimate:

1. Slack for ZAC-60 installation	3 feet
2. Vertical run from ZAC-60 to ceiling	4 feet
3. Ceiling to first cable hook in attic	4 feet
4. Length of attic run	40 feet
5. Last cable hook in attic to ceiling	4 feet
6. Ceiling to router	4 feet
Subtotal	59 feet
Add 15% fudge factor	9 feet
<b>Total</b>	<b>68 feet</b>

### 2) ZON input module to router, CAT-5e cable

The input module is positioned on a wall near the desk, so we can connect our computer (which is loaded with digital music files) to the ZON system. This is another straight run in the attic:

1. Slack for input module installation	3 feet
2. Vertical run from controller to ceiling	6 feet
3. Ceiling to first cable hook in attic	4 feet
4. Length of attic run	52 feet
5. Last cable hook in attic to ceiling	4 feet
6. Ceiling to router	4 feet
Subtotal	73 feet
Add 15% fudge factor	11 feet
<b>Total</b>	<b>84 feet</b>

### 3) Left speaker to ZAC-60 controller/amplifier

Starting from the speakers, the easiest route is to drill through the joists to get to the wall the volume control is in. We'll turn straight down from there and travel to the height of the volume control. The wire will turn and pass through several studs before reaching the ZAC-60 controller/amp.

1. Slack for speaker installation	4 feet
2. Horizontal run across ceiling to wall	4 feet
3. Vertical run inside the wall	4 feet
4. Horizontal run to ZAC-60	8 feet
5. Slack for ZAC-60 installation	4 feet
Subtotal	24 feet
15% fudge factor	4 feet
<b>Total</b>	<b>28 feet</b>

### 4) Right speaker to controller/amplifier

1. Slack for speaker installation	4 feet
2. Horizontal run across ceiling to wall	12 feet
3. Vertical run inside the wall	4 feet
4. Horizontal run to controller	8 feet
5. Slack for controller installation	4 feet
Subtotal	32 feet
15% fudge factor	5 feet
<b>Total</b>	<b>37 feet</b>

For this room you need 152 feet of CAT-5e cable. If you are using the pre-terminated cables that came with the Crutchfield do-it-yourself kit, you will use a 75-foot cable and two 50-foot cables linked by a coupler. You also need 65 feet of 2-conductor in-wall speaker wire.

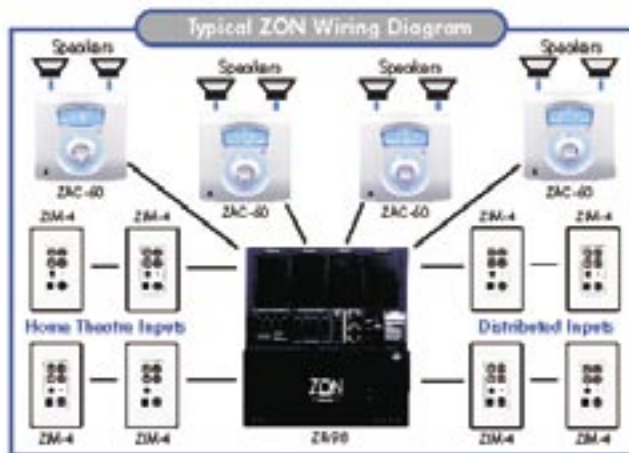
## ■ How to use the Master Plan sheets

The Master Plan sheets help you add up all of the parts you need to complete your installation. You'll know exactly how much wire and how many boxes, brackets, volume controls and other devices to buy.

Go through your Room Plan sheets and copy all of the device types in the first column of the Master Plan sheet. Then write the names of your rooms in the blank column headings. If you have more than five rooms, use as many additional Master Plan sheets as you need.

Next, transfer the quantities of each device from each Room Plan sheet to the Master Plan sheets. Work through each of your Room Plan sheets from top to bottom. As you transfer the quantity of each item to the Master Plan Sheet, use the checkbox on the Room Plan to indicate that you have added it to the master list.

Add up the quantities on the Master Plan sheet. Then add up each Master Plan sheet item and list the total quantity for each line. Now it's time to order your supplies. Use the Master Plan sheets to discuss your order with your Crutchfield Sales Advisor.



## Crutchfield Custom Installation Room Plan

Room \_\_\_\_\_ Room # \_\_\_\_\_ System \_\_\_\_\_

Date \_\_\_\_\_ Approved by \_\_\_\_\_

<b>Location Notes</b>  1. _____ 2. _____ 3. _____ 4. _____ 5. _____ 6. _____ 7. _____ 8. _____ 9. _____ 10. _____ 11. _____ 12. _____	
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#	Type of Device	Bracket or Box	Wire Type	Wire Destination	Wire Length	Time	Listed
1							<input type="checkbox"/>
2							<input type="checkbox"/>
3							<input type="checkbox"/>
4							<input type="checkbox"/>
5							<input type="checkbox"/>
6							<input type="checkbox"/>
7							<input type="checkbox"/>
8							<input type="checkbox"/>
9							<input type="checkbox"/>
10							<input type="checkbox"/>
11							<input type="checkbox"/>
12							<input type="checkbox"/>

