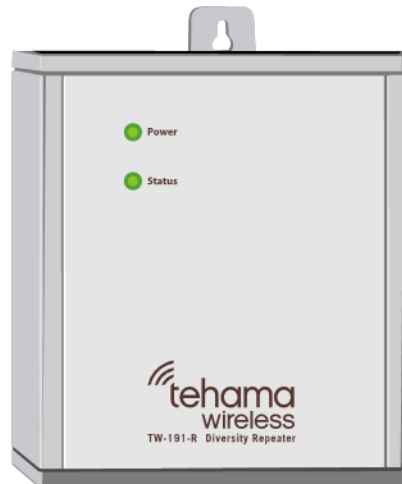


## AN-113: Diversity Repeater FAQ

This is a FAQ about the new Tehama Diversity Repeater, TW-191-R, available in late March 2015. With diversity antennas and improved sensitivity, the performance is greatly improved, allowing for a stronger RF network.

### **Q: Is the new repeater the same size as the old unit?**

A: No, the extra antenna and radio required us to increase in the size. Initial shipments will use the same case size as the DCAP now ships with. A custom case of slightly smaller dimensions will be used starting in Q3, 2015. Actual dimensions are 5.2" X 5.1" X 1.8".



### **Q: Does the new repeater use the same power supply as the old?**

A: Yes. Power requirement remains at 5V DC. Existing repeater supplies can be used with the new unit, should you wish to swap these into existing locations.

### **Q: Can the new repeater be used at existing sites?**

A: The new repeater is fully backwards compatible and can be used at any existing site to replace or enhance the existing Repeater network.

### **Q: Why is this a better repeater?**

A: First there are two antennas instead of one. This makes the repeater much less sensitive to radio reflection interference that can occur between MDTs and the Repeater.

Second, the larger size allowed us to improve the sensitivity and shape of the antenna field, effectively improving the MDT and repeater-to-repeater range by roughly 50%. In technical terms, the link budget has improved by over 6dB for each radio. Combined with the diversity feature, the average link budget can be 10dB or more compared to the old repeater.

**Q: Does the new Repeater have an external antenna like the DCAP?**

A: No, both antennas are internal to the device, similar to our MDTs and the old repeater.

**Q: Is there a backup battery like the old Repeater?**

A: No. The new repeater does not have a backup battery and only operates with line power. However it does store enough energy to stay alive for about 30 seconds when power is removed, and will transmit a "power lost" signal to the DCAP. From the CIT you can tell if a repeater has lost power and the date and time it occurred.

There are two benefits for installers. First, when you apply power, the LEDs will cycle through our start-up flash sequence like our other products, positively verifying that your AC power is good. Second, this eliminates the potential of a false RF network being created from active battery powered repeaters in your truck or tool box, leading to a false impression about the strength of the RF network.

**Q: Are there different installation requirements for this repeater?**

A: No. The repeater should still be mounted up high on a non-metal wall and with the power cord and transformer secured to prevent accidental removal.

**Q: Is there an LED indication like the old Repeater?**

A: Yes, there are actually two LEDs on the repeater. One acts as a power indicator and stays illuminated for a minute after it has synchronized to the network. The Status LED provides the normal Tehama start-up flashing sequence, then indicates the rough link quality, showing green, orange, red, or off, simulating a "number of bars" type indication. See the new Features question for details.

The LED is only on after applying power or by pushing the button. Otherwise it is off so as not to attract attention if placed in tenant space (which should be avoided if possible).

**Q: Are there any new features on this new Repeater?**

A: Yes! We have a few new features.

First, we have added a bi-color Status LED in addition to the bi-color power LED. This LED, when illuminated, shows the link quality of the link this Repeater has to its link partner repeater or DCAP. See the LED Indication question above for details

Second, we have added a QuickRSSI feature to determine an instantaneous link quality indication. When you press the button, a rapid burst of transmissions will be sent to the current link partner. You will see the Status LED flash for every successful transmission. After about five seconds, the Status LED will indicate the link quality to its link partner. Green is good, Orange is OK, Red is poor, and no LED is very poor link quality. If you get a poor or very poor indication you might move the Repeater to a different part of the room and push the button again.

**Q: What does the button do?**

A: This will light up the LEDs and initiate the QuickRSSI function. It does *not* allow you to turn off the unit if held for 3 seconds like with MDTs and our old repeater. To turn off a unit, simply disconnect it from the power.

**Q: Is there a tampering detection on the new repeater?**

A: No, just like our old repeater. A power loss indication message *is* sent to the DCAP if power is removed from the Repeater.

**Q: What is the recommended MDT to repeater ratio now?**

A: Based on a few beta sites, we are seeing a 30:1 MDT to repeater ration with 100% coverage. But your mileage will vary. This is always HIGHLY subjective to the building materials of construction, distances, placement, etc.

**Q: Is the price the same?**

A: No, the Diversity repeater will be \$15 more than the current repeater.

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Contact us:

**Tehama Wireless**

2431 5th Street

Berkeley, CA 94710

415.495.7344

[info@TehamaWireless.com](mailto:info@TehamaWireless.com)

[www.TehamaWireless.com](http://www.TehamaWireless.com)

Made in   
USA

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