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# **Giant's Despair Wireless Timing System Installation**

March 20, 2012

## Summary

For the Giants Despair Hillclimb course, the start and finish lines are on within direct line of site from each other, making this event the easiest of the PHA hillclimb events as far as wireless timing goes.

We placed the B T-Link antenna at the finish line. We placed the Z T-Link antenna in the "timing clearing, in the corner across from the timing station, and furthest from the trees toward the finish line. We used the RS232 wireless units for Z T-Link to PC communication. The A T-Link antenna was elevated to 16 feet, and placed near the start line.

## Antenna Setup Detail

<b>B T-Link</b>	<b>Antenna Type</b>	Yagi
	<b>Location</b>	Near finish line
	<b>Height</b>	32 feet
	<b>Direction</b>	minimum angle down, at 305° (magnetic)
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<b>Z T-Link</b>	<b>Antenna Type</b>	Yagi
	<b>Location</b>	At Pole used to string banner across road on timing station side. If this doesn't work, use last year's location - telephone pole across road from timing station (used to string banner and other cables across); Pole was used to support mast at 2010 event.
	<b>Height</b>	33 feet
	<b>Direction</b>	minimum angle up, at 125° (magnetic)
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<b>A T-Link</b>	<b>Antenna Type</b>	Omni
	<b>Location</b>	At start line, using pole to raise antenna as far as cable would allow
	<b>Height</b>	16 feet
	<b>Direction</b>	NA

## Cable Runs

<b>B T-Link to Finish Sensor</b>	<b>None Needed.</b> The B T-Link unit is positioned within 50 feet of finish, and a short extender cable is run on the day of the event.
<b>Z T-Link to Timing Station</b>	<b>None Needed.</b> Use wireless RS232 transmitters for this connection.
<b>A T-Link to Start Sensor</b>	<b>None Needed.</b> The A T-Link unit is positioned within 25 feet of start line

## Signal Strength at Previous Events

**2011:** Signal strength for B T-Link unit was 70-100%, mainly pegged on 100%. Signal strength for A Link unit was 90-100%.

**2010:** Signal strength for both A and B T-Link units was 100%, occasionally dipping to 90%, good enough to time the entire event.

**Map and Photos**



**Figure 1: Giants Despair Course Map and Wireless Component Locations**





**Figure 2: Giants Despair Z T-Link Antenna Mast Base Position**



**Figure 3: Giants Despair Z T-Link Antenna Mast Direction**



**Figure 4: Giants Despair B T-Link Antenna Mast Base Position**



**Figure 5: Giants Despair B T-Link Antenna Mast Direction**





**Figure 6: Giants Despair A T-Link Antenna Mast Position**

### A T-Link to Sensor Cabling

The A T-Link unit is within 25 feet of the sensors, and all that is needed is the Race America Sensor cable.

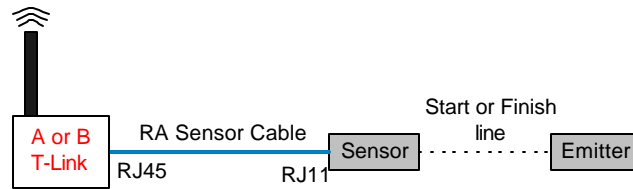


Figure 7: Basic Connection Wiring Diagram

### B T-Link to Sensor Cabling

The B T-Link unit is within 50 feet of the sensors, and the RA provided cable can be extended using a Cat 5E cable and a white RJ45 inline coupler to connect the Cat 5E cable to the Race America cable.

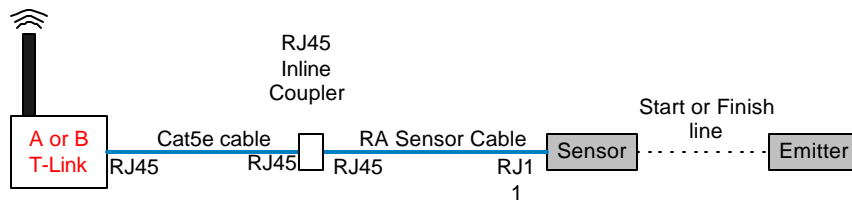


Figure 8: Basic Connection extended 50 feet, Wiring Diagram

**NOTE:** On the T-Link side, be sure to plug the RJ45 (8 pin) connector into the T-Link unit, and the RJ11 (6 pin) connector into the RJ45 inline coupler.

## Z T-Link to Timing Computer Cabling

For Giants, we use the wireless RS232 units, since running a cable from the Z T-Link unit to the timing PC means crossing the heavily traveled clearing behind the timing station. One of these units (with USB power pack) is shown at right.

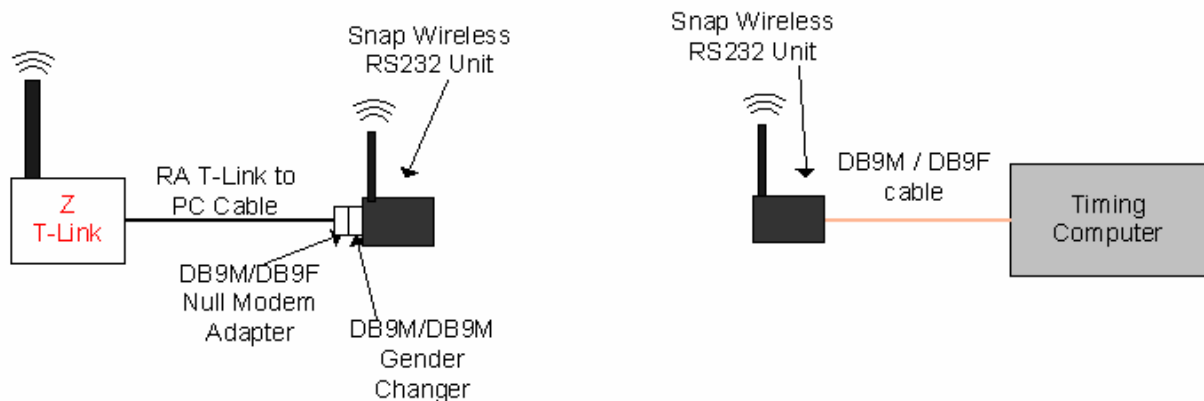


**Note on power source:** these units require a USB power source, which can be supplied via a USB power pack, or using the AC Transformer (if AC power is available). The USB power pack should last the entire event. Note that the main power packs are rechargeable and the spare power packs take 4 AA batteries.

To use the wireless RS232 units, you will need the following equipment:

- 1 Race America T-Link to PC cable,
- 2 SNAP Wireless RS232 Units and power supplies (AC or USB power pack)
- 1 DB9M / DB9F cable
- 1 DB9M / DB9F null modem adapter
- 1 DB9M / DB9M gender changer

These components are connected as follows:



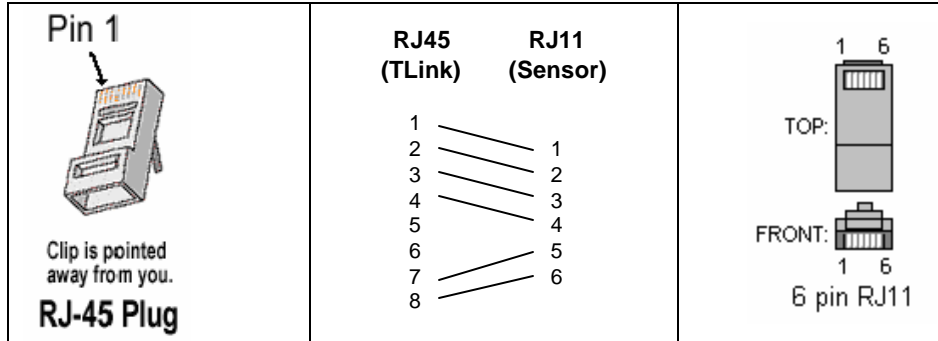
**Figure 9: Wireless RS232 Wiring Diagram**



## Cable Pinouts

This section includes pinouts for the Race America and other custom cables used for this event.

### Race America Sensor Cable Pinout



### Race America Z T-Link to PC Cable Pinout

