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engineering corp

Giant's Despair Wireless Timing System Installation

March 13, 2015

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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 T-Link	Antenna Type	Yagi
	Location	2014: Permanent Pole at finish line Previously, put up antenna mast in same location
	Height	32 feet
	Direction	minimum angle down, at 305° (magnetic)
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Z T-Link	Antenna Type	Yagi
	Location	2013: Permanent Pole at start line/timing area Previously, put up antenna mast in same location
	Height	33 feet
	Direction	minimum angle up, at 125° (magnetic)
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A T-Link	Antenna Type	Omni
	Location	Against guardrail post at start line, using window washer extension pole extended as high as possible
	Height	10 feet
	Direction	NA

Cable Runs

B T-Link to Finish Sensor	None Needed. The B T-Link unit is positioned within 25 feet of finish.
Z T-Link to Timing Station	None Needed. Use wireless RS232 transmitters for this connection.
A T-Link to Start Sensor	None Needed. 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

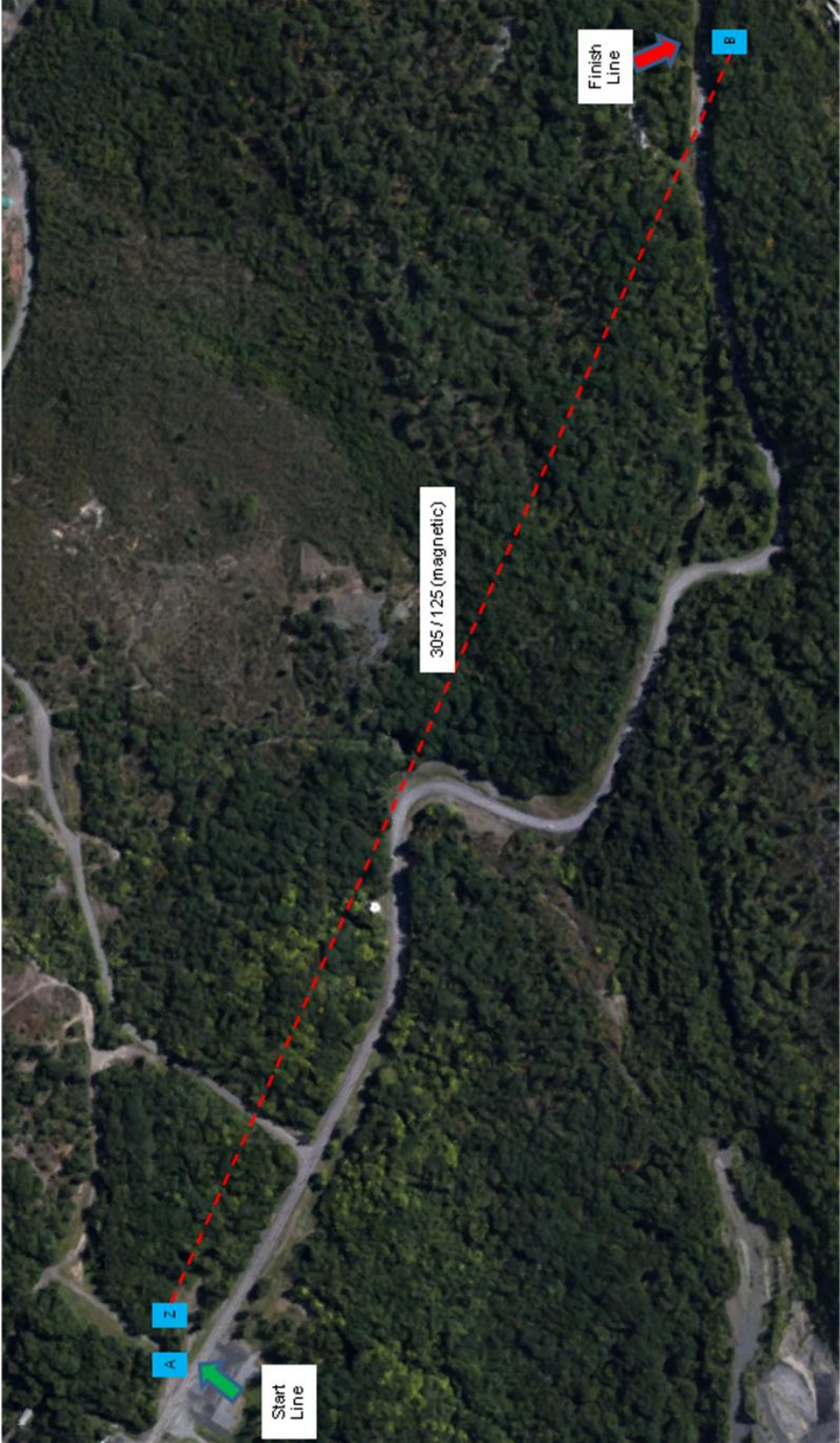


Figure 1: Giants Despair Course Map and Wireless Component Locations



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.

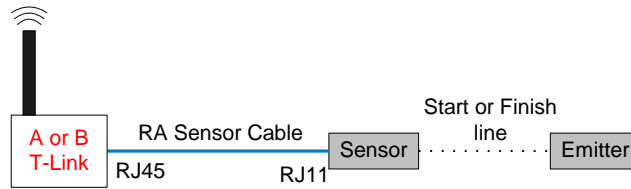


Figure 7: Basic Connection Wiring Diagram

B T-Link to Sensor Cabling

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

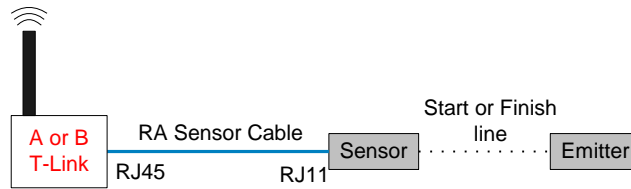


Figure 8: Basic Connection extended 50 feet, Wiring Diagram

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 RS233 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:

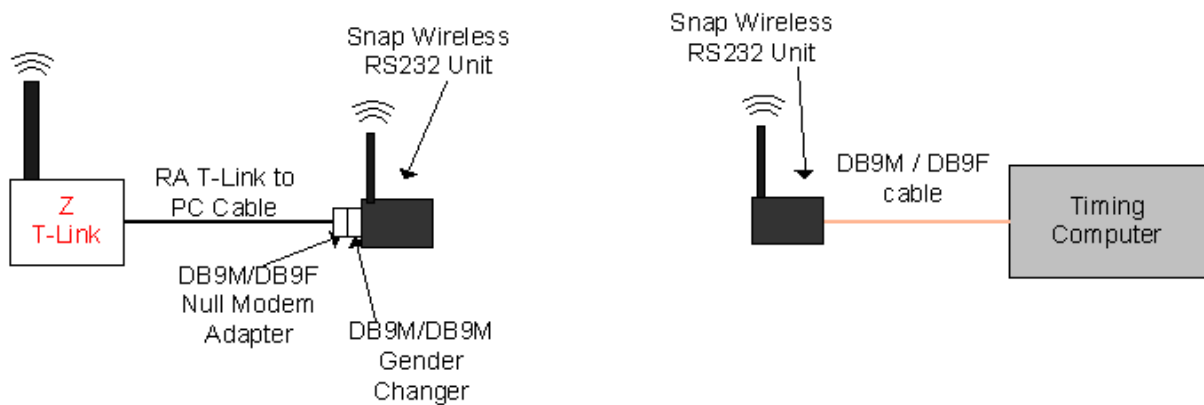
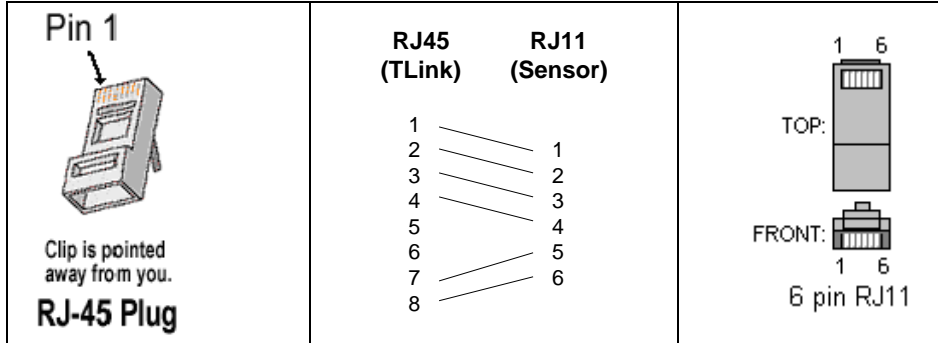


Figure 9: Wireless RS232 Wiring Diagram

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

